

Remarks/Arguments

In the Office Action mailed April 7, 2004, the Examiner rejected claims 1, 3-5 and 7-18 under 35 U.S.C. §102(e) over U.S. Patent No. 6,435,277 to Qu et al. Additionally, claims 1, 3-5, 7-12, 14, 15 and 17 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,246,072 to Frazier.

In response to the rejections applicants provide the following distinguishing remarks that are believed to place the present case in condition for allowance. Favorable reconsideration of all the pending claims is respectfully requested.

The Claimed Invention

The present invention generally relates to compositions and methods for improving the **water injectivity** of water injection wells thereby restoring permeability to the formation and enhancing the recovery of oil by the **waterflood process**.

In the official action mailed April 7, 2004, at page 3, paragraph 3, the examiner states the following:

Applicants have argued that the current invention relates to the water injectivity of an injection involving a waterflood process. Applicants claims are not directed to either of water injectivity or a waterflood process, and are thus not seen as having any distinguishing features from the prior art of Qu (column 1, lines 26-35) or Frazier (column 2, lines 15-41), both of which teach restoring permeability in a process involving an injection well.

In response to the examiner's comments, claim 1 has been amended to **clarify** that it is directed to a method for improving the **water** injectivity of water injection wells by

restoring permeability to the formation thereby enhancing the recovery of oil by the **waterflood process**. In view of these clarifying amendments, applicants respectfully submit that the pending claims are clearly distinguishable over the cited art relied on by the examiner. More particularly, the claimed method is basically a **cleaning mechanism** useful in improving **tertiary oil recovery methods** that involves the waterflood process.

On the other hand, the Qu et al.'s application is for "diversion" purposes, i.e. when fracturing (**secondary oil recovery**) or treating a formation that has a water zone and an oil zone, they use the water-based fracturing fluid to "block" the water bearing zones using a surfactant capable of generating micelles (viscosity). This fluid will lose its viscosity in the oil bearing zones as the micelles will break up upon contact with the oil. The surfactant therefore serves to divert the fracturing fluid from the water zones into the oil zones, thus minimizing the production of water in favor of the production of oil once the well is put into production (**diversion mechanism**).

Frazier et al describes a foam forming composition and to a method for recovering hydrocarbons from a formation **during the injection of a gas**. A problem with such methods is due to the viscosity and density differences between the gas and the oil, i.e., because the gas employed typically has only 5-10% of the viscosity of oil, the gas tends to bypass much of the oil when flowing through the pores of the reservoir rock. The purpose of the foam is to inhibit the flow of the gas into that portion of the formation containing only residual oil saturation. In addition, the foam physically blocks the channels through which the gas is short-cutting.

In summary, in view of the foregoing distinguishing remarks, applicants respectfully submit that neither Qu et al. nor Frazier et al. disclose the claimed method for improving the water injectivity of water injection wells by restoring permeability to the formation, thereby enhancing the recovery of oil by the waterflood process. Accordingly, neither document supports the rejection of the claimed invention under 35

U.S.C. §102. The rejections are therefore believed to be improper; reconsideration and withdrawal thereof is respectfully requested.

In view of the amendments and remarks herein, all of the pending claims are believed to be in condition for allowance, which action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Ralph J. Mancini', with a large, sweeping flourish extending to the right.

Ralph J. Mancini
Attorney for Applicants
Registration No. 34,054

Akzo Nobel Inc.
Intellectual Property Dept.
7 Livingstone Avenue
Dobbs Ferry, NY 10522-3408
(914) 674-5465